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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/714,871	11/17/2000	Richard Hellberg	2466-76	4896

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Nixon & Vanderhye PC
1100 North Glebe Road 8th Floor
Arlington, VA 22201-4714

EXAMINER

ZHENG, EVA Y

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/714,871

Applicant(s)

HELLBERG ET AL.

Examiner

Eva Yi Zheng

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7-10 and 12-17 is/are rejected.
- 7) ☒ Claim(s) 3,5,6 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Sweden on November 18, 1999. It is noted, however, that applicant has not filed a certified copy of the application as required by 35 U.S.C. 119(b).

Specification

2. The abstract of the disclosure is objected to because the content of abstract should not include the figure number as (Fig.2) in this application. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Recitation "the side-bands" is indefinite because it failed to particularly point out which element it refers to.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1,2,4,7-10,12, and 13 are rejected under 35 U.S.C. 102(a) as being anticipated by Hellberg et al. (WO 98/11683).

a) Regarding claim 1, Hellberg et al. disclose a method of generating on an output line a high-power modulated radio frequency signal S_{out} from a low or medium frequency information signal S_{in} , the method comprising the steps of:

(as shown in Fig. 4)

- pulse-shaping the information signal (X_{IF}) using sampling having a sampling frequency to form a digital signal S_D having at least two discrete signal values; (Page 12, L3-5)

- generating for each of the discrete signal values a carrier; (sequence B; Page 12, L15-18)

- amplifying and mixing the information signal (block 420) to produce a switched radio frequency signal carrying the information signal (Page 12, L 3-21); and

- filtering (block 430) the switched radio frequency signal for obtaining the high-power modulated radio frequency signal (Page 12, L23-24);

wherein, in the step of generating, the carriers are generated as alternating radio frequency voltages, and in the step of amplifying and mixing, amplifying is

performed by connecting, controlled by the discrete signal values of the digital signal, the carrier associated with the respective discrete signal value to the output line. (Page 12, L3 –Page 12, L2)

b) Regarding claim 2, Hellberg et al. disclose in the step of generating, the carriers are generated to have frequencies being multiples of the sampling frequency of digital signal. (Page 12, L 17-18)

c) Regarding claim 4, Hellberg et al. disclose in the step of filtering, a band-pass filtering is made rejecting distortion and/or an unwanted side band produced by the controlled connecting of the carriers in the step of mixing and amplifying. (Page 12, L25-26)

d) Regarding claim 7, Hellberg et al. disclose in the step of generating, the carriers are generated to stay close to zero for a time period at or around the times at which the connecting of any of the carriers is started or ended. (Page 10, L20-22)

e) Regarding claim 8, Hellberg et al. disclose (as shown in Fig. 14) the information signal is quadrature shifted in two components so that, in the step of pulse-shaping, two digital signals are formed (YI, and YQ), each having at least two discrete signal values, and that in the step of generating, carriers are generated for each of the signal values of the two digital signals, the carriers generated for the signal values of one of the digital signals having a 90 degrees phase-difference in relation to the carriers generated for the signal values of another of the two digital signals. (14030, and 14040)

f) Regarding claim 9, Hellberg et al. disclose the side-bands are used as two linearly independent channels as in the quadrature phase I and Q arrangement.

(Fig.14)

g) Regarding claim 10, Hellberg et al. disclose when one band-pass filter is used (block 1430), the signals formed in the step of mixing and amplifying (block 420) are added before the filter.

h) Regarding claim 12, Hellberg et al. disclose the filter(s) is/are (a) band-pass filter(s) rejecting distortion achieved by the amplification. (block 430, filter is followed by block 420, the mixing and amplifying unit)

i) Regarding claim 13, Hellberg et al. disclose in the step of pulse-shaping, a digital signal having only two signal values is formed. (Page 10, L7-10)

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 14, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Miki et al. (5,450,444)

a) Regarding claim 14, Miki et al discloses apparatus for generating on a high-power modulated radio frequency signal Sout from a low or medium frequency information signal Sin, the apparatus comprising: (as shown in Fig. 2)

- a quantifier (block 11,12,13, and 14) for pulse-shaping according to a sampling frequency the information signal to form a digital signal SD having at least two discrete signal values; (Col 3, L 65-Col 4, L31)

- a switching unit (block 15) connected to the quantifier to receive the digital signal and comprising carrier generators (block 17), one individual generator provided for and associated with each of the at least two signal values (block 18); and

- a filter (block 20) connected to an output line of the switching unit for achieving the high-power modulated radio frequency signal, wherein the carrier generators are arranged to generate alternating radio frequency carrier voltages and that the switching unit comprises switches for achieving a switched radio frequency signal S_{sw} , carrying the information content of the information signal, each of the switches being associated with and controlled by an individual one of the signal values of the digital signal, to connect the carrier associated with the signal value to the output line when the digital signal adopts the respective signal value and to disconnect the carrier when the digital signal does not adopt the respective signal value. (Col 4, L37-L51)

b) Regarding claim 16, Miki et al discloses the filter is a band-pass filter rejecting unwanted signals and distortion achieved by controlled connecting and disconnecting of the carriers. (Col 4, L60-Col 5, L2)

c) Regarding claim 17, Miki et al discloses the carrier generator comprises a transformer (block 19) coupled to a single generator element to generate carrier voltages having different amplitudes. (Col 4, L65 – L68)

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miki et al. (5,450,444) in view of Hellberg et al. (WO 98/11683).

As shown in Fig. 2, Miki et al. disclose an apparatus for generating on a high-power modulated radio frequency signal Sout from a low or medium frequency information signal Sin comprising: a quantifier (block 11,12,13,and 14), a switching unit (block 15), and a filter (block 20).

Miki et al. disclose all of the subject matter as described above except for the special teaching of quantifier comprises a sigma delta modulator.

Hellberg et al., in the same endeavor, teaches radio frequency signal comprises a sigma delta modulator (block 410 in Fig.4), which has a digital signal output as an input to the mixing and amplifying unit.

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the sigma delta modulator as taught by Hellberg et al. in

the system of Miki et al. in order to transform the analog signal to a signal that contains only M levels of a quantization process.

Allowable Subject Matter

11. Claims, 3, 5, 6, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Yi Zheng whose telephone number is 703-305-8699. The examiner can normally be reached on 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-879-9306.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121
Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Eva Yi Zheng
Examiner
Art Unit 2634

January 5, 2004

A handwritten signature in black ink, appearing to read 'Shuwang Liu', with a stylized flourish at the end.

SHUWANG LIU
PRIMARY EXAMINER